

ICHTHYOLOGY.—*The status and distribution of the fishes of the family Microdesmidae in the Western Atlantic*<sup>1</sup>. C. RICHARD ROBINS and RAYMOND B. MANNING, The Marine Laboratory, University of Miami. (Communicated by E. A. Lachner.)

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The family Microdesmidae encompasses a widely distributed but little-known group of tropical marine fishes. Placed by most workers in the suborder Blennioidea, Gossline (1955) has recently suggested their transfer to the Gobioidae. He also aligned *Gunnelichthys* with the Microdesmidae instead of with the Pholichthyidae or Chaenopsidae. Smith (1958) followed this arrangement and (1) synonymized *Paragobioides* with *Gunnelichthys*, (2) erected *Clarkichthys* for *Cerdale bilineata*, (3) considered *Clarkichthys*, *Microdesmus* and *Gunnelichthys* as subgenera of *Gunnelichthys*, and (4) changed the family to Gunnelichthyidae (= Gunnelichthyidae). Earlier, Reid (1936) had reviewed the species known at that time and synonymized *Cerdale* and *Leptocerdale* with *Microdesmus*. Clark (1936), Myers and Wade (1946) and Kanazawa (1952) have also contributed to our knowledge of the family. Tentatively the writers persist in maintaining *Microdesmus* and *Gunnelichthys* as separate genera and thus the family name Microdesmidae. We do not comment on *Clarkichthys*.

At present, four species, *Microdesmus longipinnis* (Weymouth), *M. aethiopicus* (Chabanaud), *M. woodsi* Kanazawa and *M. floridanus* (Longley) are recognized in the Atlantic Ocean. Of the four, *aethiopicus* is known only from the eastern Atlantic and, since we can add nothing to Reid's account it will not be discussed further. The other three, from the tropical western Atlantic are especially interesting since they represent the extremes of body form in the genus, *longipinnis* the elongate form and *floridanus* the short-bodied form.

Our interest in the Microdesmidae was aroused by the capture of a specimen at night using a light at the dock of the Marine Laboratory, Florida (UMML) which an-

swered equally well the descriptions of *longipinnis* and *woodsi*.

We are indebted to James E. Böhlke at the Academy of Natural Sciences of Philadelphia (ANSP) and to Leonard P. Schultz and Ernest A. Lachner at the United States National Museum (USNM) for the privilege of examining material in their care. Daniel M. Cohen loaned material from the Florida State Museum at the University of Florida (UF). Robert H. Kanazawa provided additional data on *woodsi* from his notes and Giles W. Mead provided the X-ray photographs of National Museum material. Material from the Alan Hancock Foundation (AHF) was examined at the Academy of Natural Sciences of Philadelphia where it was on loan to Dr. Böhlke. Loren P. Woods provided information on the holotype of *M. woodsi*.

*Material examined*.—*Microdesmus longipinnis*: Louisiana: USNM 64157 (1 specimen, 208 mm. in standard length), holotype. USNM 64158 (1, 171), paratype. USNM 107251 (1, 119). USNM 107753 (1, 186), USNM 117614 (2, 66–73). USNM 133654 (1, 46). Mississippi: USNM 121990 (1, 76). USNM 121989 (1, 56). AHF uncat. (4, 40–60). Florida: UMML 1901 (1, 170).

*Microdesmus floridanus*: Florida: USNM 102050 (1, 58), holotype. UF 7048 (1, 64). ANSP uncat. (4, 42–65). Bahamas: ANSP 80576 (1, 38), ANSP 81371 (1, 32), both from New Providence Island.

*Microdesmus affinis*: Panama: USNM 84300 (1, 98), holotype.

#### *Microdesmus longipinnis* (Weymouth)

Tables 1 and 3

*Leptocerdale longipinnis* Weymouth, 1910: 142–144, figs. 1–2 (description, type locality: Cameron, Louisiana; type species of *Leptocerdale*, good illustration).

*Microdesmus longipinnis*, Reid, 1936: 71–72 (characters, relationships). Kanazawa, 1952: 95 (characters, compared with *affinis* and *woodsi*).

*Microdesmus woodsi* Kanazawa, 1952: 93–95, fig.

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TABLE 1.—FREQUENCY DISTRIBUTIONS OF FIN-RAY AND VERTEBRAL COUNTS OF *Microdesmus longipinnis* (WEYMOUTH) (\* INDICATES HOLOTYPE OF *M. longipinnis*, † THE HOLOTYPE OF *M. woodsi* KANAZAWA). COUNTS SUPPLEMENTED WITH DATA FROM WEYMOUTH (1910:144)

Total dorsal elements							Anal rays					Pectoral rays		Dorsal fin ray over origin of anal fin			Vertebrae	
66	67	68	69	70	71	72	41	42	43	44	45	12	13	27/28	28/29	29/30	63	64
1	2	6*	5	7	3†	1	1	6*	6	5†	7	6*	8†	1	3	1*	1†	2*

TABLE 2.—FREQUENCY DISTRIBUTION OF FIN-RAY AND VERTEBRAL COUNTS OF *Microdesmus floridanus* (LONGLEY AND HILDEBRAND) (\* INDICATES HOLOTYPE)

Total dorsal elements					Anal rays					Pectoral rays		Dorsal fin ray over origin of anal fin		Vertebrae
43	44	45	46		27	28	29	30	31	13	14	16/17	17/18	45
2	2	3*	1	1	—	1	2*	4		1	15*	3	2	1*

13 (description, type locality: St. David's Island, Bermuda).

Fin-ray counts and morphometric data are provided in Tables 1 and 3. Of the material listed above from which our data were taken only two are from the type series. The other 10 paratypes are at Stanford University (SU 2139) as noted by Böhlke (1953: 100). Dorsal and anal-ray counts listed by Weymouth (1910: 144) have been added to Table 1. Despite the completeness of the description and the excellent figure of the holotype there has been considerable confusion about *longipinnis*. The body form depicted by Reid (1936: fig. 9g) is much too slim and is either based on a badly preserved specimen or was poorly executed. Similarly, Reid's (1936: fig. 12c) figure of the head of *longipinnis* shows too sharp a snout. The data on depth of body and head length as described by Weymouth (1910: 144) and by Reid (1936: 71) disagree. For example Weymouth expressed body depth in terms of total length which should yield a higher figure. However, the range of variation shown by him,  $24\frac{1}{2}$  to  $33\frac{1}{2}$ , is lower than the 28.3 to 34.4 listed by Reid (based on the same material) in terms of standard length. The length of head presents a similar picture. The two specimens from the type series examined by us are in poor condition, their

bellies much shrunken and the body flaccid. In elongate fishes such as the microdesmids, changes in body conditions will profoundly affect morphometric data. This is especially true when one attempts to express a small body part in terms of the very long body. In a fresh specimen (UMML 1901) the greatest body depth entered standard and total lengths 20.0 and 21.2 times respectively. Comparable data for head length were 12.6 and 13.3.

Since the collection on which Weymouth's description was based was made in 1906 considerable distortion of body form could have occurred. Significantly, Reid's data, taken many years later, show even more distortion. Weymouth's data are presumably the more accurate.

Reid's review indicates that there are correlated differences in fin-ray and vertebral counts and in body proportions for most of the species of *Microdesmus*. A species in such a group based only on a few proportional differences incites some question.

Kanazawa (1952: 94) gives the following data for *woodsi*: "Dorsal fin rays 71; anal 44; pectoral rays 13; ventral I, 3; vertebrae 63 (x-ray count)" and later states (1952: 95) that "this species may be distinguished from all others of this genus by the number of vertebrae, the number of dorsal and anal rays, and the position of the vent." However, the dorsal, anal and pectoral ray counts are within the variation of *longipinnis* (Table 1) and, although few data are available, these are probably shared by *affinis* as well. Kanazawa lists 63 vertebrae (including the terminal vertebra which bears the hypural plate). Weymouth (1910: 142-143) lists 62 vertebrae and the hypural plate or a total of 63. Reid (1936) attributes 62 vertebrae (28 body and 34 caudal) to both *affinis* and *longipinnis* but fails to mention if the hypural plate was included.

X-ray photographs were taken for USNM 64157, the holotype of *longipinnis*, USNM 107251, a specimen from Louisiana labeled *woodsi*, and USNM 84300 the holotype of *affinis*. Vertebral counts for these three specimens are 64 (31 + 33), 64 (30 + 34) and 63 (30 + 33) respectively. The count for the holotype of *woodsi* (63) is not an unexpected variant and is matched by one of the cotypes according to Weymouth's data.

Additional differences between *woodsi* and *longipinnis* were tabulated by Kanazawa (1952:



TABLE 3.—PROPORTIONS OF BODY PARTS OF *Microdesmus longipinnis* (WEYMOUTH) EXPRESSED AS PERCENTAGE OF STANDARD OR (\*) HEAD LENGTH

Pre-anal fin length							Pre-dorsal fin length							Head length			Greatest body depth			Depth at anal fin origin		
46	47	48	49	50	51	52	53	9	10	11	12	13	14	6	7	8	3	4	5	3	4	5
1	—	—	2	1	—	1	1	2	2	—	—	—	2	2	—	2	1	1	2	2	1	1

  

Caudal fin length			Anal fin origin to midpoint hypural plate								Pre-vent							Eye diameter*						
5	6	7	47	48	49	50	51	52	53	54	45	46	47	48	49	50	51	6	7	8	9	10	11	12
1	2	3	2	—	—	2	1	—	—	1	1	—	1	1	1	1	1	2	—	—	—	—	—	1

95). Of them one stems from a clerical error for Kanazawa (in litt.) notes that the 1.3 measurement for the snout to anus distance in the column headed "*longipinnis*" should read 2.1; the latter figure compares well with the 2.0 for *woodsii*. The position of the vent varies about the midpoint of the body. Thus the pre-vent distance varies from 45 to 51 percent of the standard length and the distance from the vent to the tip of the hypural plate from 47 to 54 percent (see Table 3). The other differences as already noted result from poorly preserved specimens or are not of sufficient magnitude to be judged of specific value.

Thus we synonymize *M. woodsii* with *M. longipinnis*. *M. affinis* from the eastern Pacific differs in having a more restricted gill opening and in a more anterior placement of the anus. It is a close ally of *longipinnis* and additional material may show that the two forms are conspecific. Counts for the holotype of *affinis* are: dorsal-fin elements, 69, anal rays, 43, pectoral rays, 12, vertebrae, 63. Morphometric data expressed as percentages of standard length are: pre-anal fin length 54, greatest body depth 6, depth at anal fin origin 5, caudal fin length 6, origin of anal fin to midpoint of hypural plate 45, and pre-vent 53.

All the specimens of *Microdesmus* examined have 17 striated caudal rays. The number of striated caudal rays may aid in aligning genera and/or subgenera in the Microdesmidae.

*Habits*.—The Miami specimen was taken using a night light at The Marine Laboratory Dock and kept alive for a short time. The body and particularly the fins were flushed with pink, evidently a result of superficial blood circulation. It was very active and swam much like

the worm eel, *Ahlia egmontis*, which was collected the same evening. Subsequent night-light operations failed to yield additional specimens.

*Range*.—*M. longipinnis* is known from the northern Gulf of Mexico in Louisiana and Mississippi to southern Florida and Bermuda. Although the material is limited, it is obvious that this little known bottom fish enjoys a wide geographic distribution. The species has not been recorded previously from Florida.

***Microdesmus floridanus* (Longley)**

Tables 2 and 4

*Cerdale floridana* Longley, 1934: 259 (description). *Microdesmus floridanus* Reid, 1936: 60-62 (characters, figures, relationships). Longley and Hildebrand, 1940: 275-276 (characters, fig. 24, gill slit erroneously depicted). Myers and Wade, 1946: 165 (generic position).

As may be seen from Tables 2 and 4, *M. floridana* differs markedly from *longipinnis*. A short-

TABLE 4.—PROPORTIONS OF BODY PARTS OF *Microdesmus floridanus* (LONGLEY AND HILDEBRAND) EXPRESSED AS A PERCENTAGE OF STANDARD OR (\*) HEAD LENGTH

Pre-anal fin length			Pre-dorsal fin length										Head length				Greatest body depth			Depth at anal fin origin			
50	51	52	18	19	20	21	22	23	14	15	16	17	11	12	13	10	11	12	13				
1	3	4	1	1	1	1	2	1	3	2	1	1	1	3	4	1	2	4	1				

  

Caudal fin length					Anal fin origin to midpoint hypural plate						Pre-vent			Eye diameter		
10	11	12	13	14	45	46	47	48	49	50	49	50	51	15/17	18/20	21/23
1	3	2	1	1	1	—	1	1	2	2	1	5	2	3	2	1

bodied form with few fin rays and vertebrae it is not surprising that it was placed in a separate genus. Any single character including the gill slit position appears to form a graded series when Pacific and African species are considered. All eight specimens examined possessed 17 striated caudal rays which seems constant for the genus *Microdesmus*.

*Range.*—*M. floridanus* is now known from the Dry Tortugas, the Florida Keys (Big Pine Key), and the Bahamas (New Providence Island).

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*My dear collaborators, keep your enthusiasm, but let its inseparable companion be rigorous control. Do not advance any idea which cannot be proved in a simple and decisive manner. Cultivate the critical spirit. In itself, it is neither a provoker of ideas nor a stimulant to great things. It always has the last word, however.*—PASTEUR.